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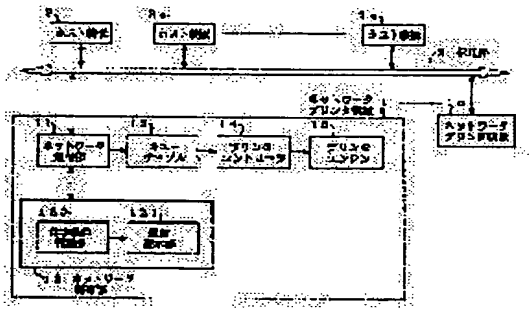
(54) NETWORK PRINTER

(57)Abstract:
PROBLEM TO BE SOLVED: To shorten print processing by a method wherein printing is always carried out with an optimum printer by neither establishing emulation nor monitoring a state of an apparatus.
SOLUTION: A host apparatus which outputs by printing, outputs printing conditions containing a type of a treating print data, a paper size wanted to be outputted, etc., to all network printers 1. A printing condition discriminating part 120 of each network printer 1 discriminates whether or nor printing is possible according to printing conditions sent via a network communication part 11. A transmission request part 121, when it is discriminated printable, sends out a request to send via the network communication part 11. The host apparatus 2 having received it sends out the print data to the network printer 1 as a sender of the request to send which is received at first.



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CLAIMS

[Claim(s)]
[Claim 1] It has the network communication section, the network control section, a queue table, a printer controller, and printer engine. The network communication section receives transmission of the various data to the transmission line which constitutes a network, or the various data from a transmission line. The format of printing data that the network control section had the printing condition distinction section and the Request-to-Send section, and the printing condition distinction section has been sent through the network communication section from host equipment, Distinguish whether according to the printing conditions containing paper size, it is printable, and the Request-to-Send section sends out the Request to Send which requires that printing data should be transmitted when printing **** is distinguished in the printing condition distinction section through the network communication section to the host equipment which has sent printing conditions. A queue table carries out sequential storing of the printing data sent through the network communication section from host equipment by sending out a Request to Send in the Request-to-Send section. It is network printer equipment which a printer controller chooses printing data from a queue table according to the sequence which stored printing data, sends it out to printer engine, and is characterized by printing printer engine based on selected printing data.
[Claim 2] The above-mentioned network control section has the printing condition distinction section, the Request-to-Send section, and the Request-to-Send delay section. The Request to Send which requires that the Request-to-Send section should transmit printing data when printing **** is distinguished in the printing condition distinction section is sent out to the Request-to-Send delay section. The Request-to-Send delay section is network printer equipment according to claim 1 sent out to the host equipment which has sent printing conditions after being delayed according to the time delay which defined the sent Request to Send according to the throughput beforehand through the network communication section.
[Claim 3] It is network printer equipment according to claim 1 which the above-mentioned network-control section has the printing condition distinction section, the Request-to-Send section, the time delay calculation section, and the Request-to-Send delay section, and the time delay calculation section computes a time delay according to the printing amount of data stored in the queue table, and sends out through the network-communication section to the host equipment which has sent printing conditions after the Request-to-Send delay section is delayed according to the time delay which computed the Request to Send sent from the Request-to-Send section in the time delay calculation section.
[Claim 4] The above-mentioned network control section has the printing condition distinction section, the Request-to-Send section, the time delay calculation section, and the Request-to-Send delay section. The time delay calculation section computes a time delay by carrying out the multiplication of the time amount beforehand set to the printing amount of data stored in the queue table according to the throughput. The Request-to-Send delay section is network printer equipment according to claim 1 sent out to the host equipment which has sent printing conditions after being delayed according to the time delay which computed the Request to Send sent from the Request-to-Send section in the time delay calculation section through the

network communication section.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the increase in efficiency of the network printer equipment which constitutes a network with host equipment etc. and prints in a record form according to the sent printing data, especially printing processing.
[0002]
[Description of the Prior Art] The network printer equipment which constitutes a network with host equipment and prints in a record form according to the sent printing data is shown in JP,8-101800,A, JP,8-115184,A, etc. The network printer equipment shown in JP,8-101800,A etc. has connected two or more printer equipments which performed beforehand emulation setting out with host equipments, such as a format of the font classification to be used and printing data, and a paper size to be used, to a network. Moreover, two or more printer equipments are packed as one group by the means of communications of each printer equipment which exchanges information between printer equipment. and the demand from host equipment — responding — the means of communications of one printer equipment in a group — other printer equipments — record — a ****** [being working] — asking — each printer equipment of a group — record — the information on whether to be working or not is transmitted to host equipment.
Compaction of printing processing of printer equipment is in drawing because host equipment carries out a record output request according to the priority given to each printer equipment of a group based on the sent information.
[0003] Moreover, the network printer equipment shown in JP,8-115184,A etc. constitutes a network with two or more printer equipments with two or more server computers and client computers, and if a server computer performs storing of the printing data sent from the client computer, and condition monitoring of each printer equipment and has a demand from a client computer, it sends out the information which shows the storing situation of printing data, and the condition of each printer equipment. A client computer displays the storing situation of printing data, and the condition of printer equipment on a display according to the sent information. An operator chooses the printer equipment which checks the display, is not crowded and is operating in the good condition. And compaction of printing processing of printer equipment is in drawing by a client computer outputting the printing demand it is directed that prints the printing data beforehand sent in and stored in the server computer with selected printer equipment, and making selected printer equipment print it.
[0004]
[Problem(s) to be Solved by the Invention] In the above-mentioned network printer equipment, since it is made to operate on the assumption that emulation setting out of the format of the font classification used between the equipment linked to a network and printing data, the paper size to be used is in agreement, for example, when making modification of a form or a change of a font, emulation setting out of the equipment concerning printing had to be changed each time, and it was dramatically troublesome.
[0005] Moreover, although compaction of printing processing of printer equipment is in drawing by making the printer equipment which uses a server computer, is made to display the monitor

result on a client computer, is not crowded to an operator, and is operating in the good condition choose in order to supervise the condition of each printer The processing time which starts a monitor etc. in proportion to the number of the printer equipment linked to a network increased, and there was a possibility that the processing time synthetic as a result might be delayed.
[0006] Without making this invention in order to cancel this demerit, and carrying out emulation setting out and condition monitoring of equipment, it is making it print with the always optimal printer equipment, and aims at obtaining the network printer equipment which aims at compaction of printing processing.
[0007]
[Means for Solving the Problem] The network printer equipment concerning this invention It has the network communication section, the network control section, a queue table, a printer controller, and printer engine. The network communication section receives transmission of the various data to the transmission line which constitutes a network, or the various data from a transmission line. The format of printing data that the network control section had the printing condition distinction section and the Request-to-Send section, and the printing condition distinction section has been sent through the network communication section from host equipment, Distinguish whether according to the printing conditions containing paper size, it is printable, and the Request-to-Send section sends out the Request to Send which requires that printing data should be transmitted when printing **** is distinguished in the printing condition distinction section through the network communication section to the host equipment which has sent printing conditions. A queue table carries out sequential storing of the printing data sent through the network communication section from host equipment by sending out a Request to Send in the Request-to-Send section. A printer controller chooses printing data from a queue table according to the sequence which stored printing data, and sends them out to printer engine, and it is characterized by printing printer engine based on selected printing data.
[0008] Moreover, the above-mentioned network control section has the printing condition distinction section, the Request-to-Send section, and the Request-to-Send delay section. The Request to Send which requires that the Request-to-Send section should transmit printing data when printing **** is distinguished in the printing condition distinction section is sent out to the Request-to-Send delay section. After the Request-to-Send delay section is delayed according to the time delay which defined the sent Request to Send according to the throughput beforehand, it is good to send out to the host equipment which has sent printing conditions through the network communication section.
[0009] Moreover, the above-mentioned network-control section has the printing condition distinction section, the Request-to-Send section, the time delay calculation section, and the Request-to-Send delay section, and the time delay calculation section computes a time delay according to the printing amount of data stored in the queue table, and after the Request-to-Send delay section is delayed according to the time delay which computed the Request to Send sent from the Request-to-Send section in the time delay calculation section, it is good [the section] to send out through the network-communication section to the host equipment which has sent printing conditions.
[0010] Furthermore, the above-mentioned network control section has the printing condition distinction section, the Request-to-Send section, the time delay calculation section, and the Request-to-Send delay section. The time delay calculation section computes a time delay by carrying out the multiplication of the time amount beforehand set to the printing amount of data stored in the queue table according to the throughput. After the Request-to-Send delay section is delayed according to the time delay which computed the Request to Send sent from the Request-to-Send section in the time delay calculation section, it is desirable to send out to the host equipment which has sent printing conditions through the network communication section.
[0011]
[Embodiment of the Invention] In the network printer equipment of this invention, a network is constituted from connecting two or more network printer equipments through a transmission line with two or more host equipments, and each network printer equipment has the network communication section, the network control section, a queue table, a printer controller, and

printer engine, respectively. The network communication section controls control of the transmit timing for avoiding the collision of the various data on the transmission line which constitutes a network etc., and incorporation of various data. The network control section has the printing condition distinction section and the Request-to-Send section, and it distinguishes [which can print, for example according to the format, the paper size, and the printing amount of data of printing data] whether the printing condition distinction sections are printing conditions sent through the network communication section from host equipment. The Request-to-Send section sends out a Request to Send to the host equipment which has sent printing conditions through the network communication section, when printing **** is distinguished in the printing condition distinction section. A queue table carries out sequential storing of the printing data which it was sent from host equipment and received through the network communication section by sending out a Request to Send in the Request-to-Send section. A printer controller chooses printing data according to the sequence which stored printing data, and sends them out to printer engine. Printer engine is printed in a record form based on the sent printing data.

[0012] The host equipment which carries out a printout in the condition of having constituted the network, with two or more network printer equipments and two or more host equipments as mentioned above is outputted to all the network printer equipments that constitute the network for the printing conditions constituted from the amount of data of the format of the printing data which self is treating, a paper size to output, and printing data etc. It distinguishes whether the printing condition distinction section of each network printer equipment is printable according to the printing conditions sent through the network communication section. The Request-to-Send section sends out a Request to Send through the network communication section, when printing **** is distinguished in the printing condition distinction section. Here, the host equipment which sent out printing conditions sends out printing data to the network printer equipment which is the delivery origin of the Request to Send which received at the very beginning. Thus, the automatic and optimal network printer equipment can be made to print, without carrying out setting-out modification of an emulation and condition monitoring of each network printer equipment, since only the network printer equipment which can respond to the printing conditions of host equipment sends out a Request to Send to host equipment and received printing data.

[0013] Although the printout is carried out with the network printer equipment which can respond to the printing conditions of host equipment above, it can respond to printing conditions and a throughput can carry out a printout with quick network printer equipment.

[0014] In this case, the Request-to-Send delay section other than the printing condition distinction section and the Request-to-Send section is prepared in the network control section of each network printer equipment, and the Request-to-Send section sends out a Request to Send to the Request-to-Send delay section, when printing **** is distinguished in the printing condition distinction section. The Request-to-Send delay section is sent out through the network communication section, after delaying sending out of the Request to Send sent from the Request-to-Send section according to the time delay beforehand defined according to printing throughputs, such as self printer engine. Here, the host equipment which sent out printing conditions sends out printing data to the quickest network printer equipment of a printing throughput according to the Request to Send which received at the very beginning. Thus, it can be made to print with the quick network printer equipment of a printing throughput, without carrying out setting-out modification of an emulation and condition monitoring of each network printer equipment, since it was made to delay the Request to Send sent out to host equipment according to the time amount according to a self throughput.

[0015] Although it corresponds to the printing conditions of host equipment above and a printout is carried out with the quick network printer equipment of a throughput, the printing amount of data which corresponded to printing conditions and was stored in the queue table can carry out a printout with little network printer equipment.

[0016] In this case, the printing condition distinction section, and the time delay calculation section and the Request-to-Send delay section other than the Request-to-Send section are prepared in the network control section of each network printer equipment, the time delay

calculation section computes a time delay according to the printing amount of data stored in the queue table, and the Request-to-Send delay section is sent out through the network communication section, after delaying sending out of the Request to Send sent from the Request-to-Send section according to the computed time delay. Thus, it can be made to print with network printer equipment with few amounts of printing data, without carrying out setting-out modification of an emulation and condition monitoring of each network printer equipment, since it was made to delay the Request to Send sent to host equipment according to the already stored printing amount of data.

[0017] Although the printing amount of data which corresponds to the printing conditions of host equipment above, and has already been stored carries out a printout with the fewest network printer equipment, the latency time until it carries out a printout can carry out a printout with the shortest network printer equipment.

[0018] In this case, the time delay calculation section of each network printer equipment computes a time delay by carrying out the multiplication of the time amount set to the printing amount of data stored in the queue table according to the throughput. The Request-to-Send delay section is sent out through the network communication section, after delaying sending out of the Request to Send sent from the Request-to-Send section according to the computed time delay. Here, the host equipment which sent out printing conditions sends out printing data to network printer equipment with the shortest latency time of a printout according to the Request to Send which received at the very beginning. Thus, the latency time until it carries out a printout can carry out a printout with the shortest network printer equipment, without carrying out setting-out modification of an emulation and condition monitoring of each network printer equipment, since it was made to delay the Request to Send sent to host equipment according to the value which carried out the multiplication of the time amount set to the already stored printing amount of data according to the throughput, and found it.

[0019]

[Example] Drawing 1 is the block diagram showing the configuration of one example of this invention. As shown in drawing, two or more network printer equipments 1-1n constitute a network through a transmission line 3 with two or more host equipments 2-2n. And each network printer equipments 1-1n have the network communication section 11, the network control section 12, the queue table 13, a printer controller 14, and printer engine 15. The network communication section 11 carries out incorporation of various data etc., when control of the transmit timing for avoiding the collision of the various data on the transmission line 3 which constitutes the network etc., and the reception place discernment ID for example, from a transmission line 3 are checked and it is in agreement with the discernment ID of a local station. It distinguishes whether the network control section 12 has the printing condition distinction section 120 and the Request-to-Send section 121, and can print the printing condition distinction section 120 according to for example, the transmitting agency discernment ID of the printing conditions sent through the network communication section 11 from the host equipments 2-2n, the format of the printing data ID and printing data, a paper size, and the printing amount of data. The Request-to-Send section 121 sends out the Request to Send which added the discernment ID of a local station through the network communication section 11 to the transmitting agency discernment ID and the printing data ID of printing conditions, when printing **** is distinguished in the printing condition distinction section 120. The queue table 13 carries out sequential storing of the printing data which it was sent from the host equipments 2-2n, and were received through the network communication section 11 by sending out a Request to Send in the Request-to-Send section 121. A printer controller 14 chooses printing data according to the sequence which stored printing data, and sends them out to printer engine 15. Printer engine 15 is printed in a record form based on the sent printing data.

[0020] Actuation of the network printer equipments 1-1n constituted as mentioned above is explained using the transition diagram of drawing 2 of operation.

[0021] The host equipment 2 which carries out a printout as shown in drawing is outputted to the printing data ID list for identifying the amount of data of the format of the printing data which self is treating, a paper size to output, and printing data, and printing data to all the network

printer equipments 1-1n that constitute the network for the printing conditions constituted from transmitting agency discernment ID of a local station (step S1). It distinguishes whether the each network printer equipments [1-1n] printing condition distinction section 120 is printable according to the printing conditions sent through the network communication section 11 (step S2). Here, when the printing condition distinction section 120 of network printer equipment 1 distinguishes printing ****, the Request-to-Send section 121 of network printer equipment 1 sends out the Request to Send which added the discernment ID of a local station through the network communication section 11 to the transmitting agency discernment ID and the printing data ID of printing conditions (step S3). And the host equipment 2 which sent out printing conditions checks the transmitting agency discernment ID and the printing data ID of the Request to Send which received at the very beginning, and sends out the printing data corresponding to the printing data ID to the network printer equipment 1 of delivery origin (step S4).

[0022] Thus, the automatic and optimal network printer equipment 1 can be made to print, without carrying out setting-out modification of an emulation and each network printer equipments [1-1n] condition monitoring, since only the network printer equipment 1 which can respond to printing conditions from host equipment 2 sends out a Request to Send to host equipment 2 and received printing data.

[0023] Although the actuation when carrying out a printout with the network printer equipment 1 which can respond to the printing conditions of host equipment 2 above was explained To drawing 3 So that it may be shown Sending out of the Request to Send sent from the Request-to-Send section 121 according to the time delay beforehand set to the each network printer equipments [1-1n] network control section 12 according to the printing throughput of the printer engine 15 grade of self besides the printing condition distinction section 120 and the Request-to-Send section 121 By forming the Request-to-Send delay section 122 to delay, it can respond to each host equipments [2-2n] printing conditions, and a throughput can carry out a printout with the quick network printer equipments 1-1n.

[0024] In this case, as shown in the transition diagram of drawing 4 of operation, the Request-to-Send section 121 sends out the Request to Send which added the discernment ID of a local station to the transmitting agency discernment ID and the printing data ID of printing conditions to the Request-to-Send delay section 122, when printing **** is distinguished in the printing condition distinction section 120 (step S21). The Request-to-Send delay section 122 sends out a Request to Send through the network communication section 11, after delaying sending out of the Request to Send sent from the Request-to-Send section 121 according to the time delay beforehand defined according to the printing throughput of the printer engine 15 grade of self (step S22) (step S23). Here, the host equipment 2 which sent out printing conditions checks the transmitting agency discernment ID and the printing data ID of the Request to Send which received at the very beginning, and sends out the printing data corresponding to the printing data ID to the network printer equipment 1 of delivery origin (step S24).

[0025] Thus, it can be made to print with the quick network printer equipment 1 of a printing throughput, without carrying out setting-out modification of an emulation and each network printer equipments [1-1n] condition monitoring, since it was made to delay the Request to Send sent out to host equipment 2 according to the time amount according to a self throughput.

[0026] Although the actuation when being able to respond to the printing conditions of host equipment 2 above, and carrying out a printout with the quick network printer equipment 1 of a throughput was explained As shown in drawing 5 In the each network printer equipments [1-1n] network control section 12 Sending out of the Request to Send sent from the Request-to-Send section 121 according to the printing condition distinction section 120, the time delay calculation section 123 which computes a time delay according to the printing amount of data stored in the queue table 13 other than the Request-to-Send section 121, and the computed time delay By forming the Request-to-Send delay section 122 to delay, the printing amount of data which corresponded to each host equipments [2-2n] printing conditions, and was stored in the queue table 13 can carry out a printout with little network printer equipments 1-1n.

[0027] In this case, as shown in the transition diagram of drawing 6 of operation, the Request-

to-Send section 121 sends out the Request to Send which added the discernment ID of a local station to the transmitting agency discernment ID and the printing data ID of printing conditions to the Request-to-Send delay section 122, when printing **** is distinguished in the printing condition distinction section 120 (step S31). The time delay calculation section 123 computes a time delay according to the printing amount of data stored in the queue table 13 (step S32). The Request-to-Send delay section 122 sends out a Request to Send through the network communication section 11, after delaying sending out of the Request to Send sent from the Request-to-Send section 121 according to the computed time delay (step S33) (step S34). Here, the host equipment 2 which sent out printing conditions sends out printing data to network printer equipment 1 with few amounts of the printing data already stored according to the Request to Send which received at the very beginning (step S35).

[0028] Thus, it can be made to print with network printer equipment 1 with few amounts of printing data, without carrying out setting-out modification of an emulation and condition monitoring of each network printer equipment, since it was made to delay the Request to Send sent to host equipment 2 according to the already stored printing amount of data.

[0029] Although actuation in case the printing amount of data which can respond to the printing conditions of host equipment 2 above, and has already been stored carries out a printout with the fewest network printer equipment 1 was explained By carrying out the multiplication of the time amount set to the printing amount of data stored in the queue table 13 at the above-mentioned time delay calculation section 123 shown in drawing 5 according to the throughput, and making a time delay compute The latency time until it carries out a printout can carry out a printout with the shortest network printer equipment 1.

[0030] In this case, as shown in the transition diagram of drawing 6 of operation, the Request-to-Send section 121 sends out the Request to Send which added the discernment ID of a local station to the transmitting agency discernment ID and the printing data ID of printing conditions to the Request-to-Send delay section 122, when printing **** is distinguished in the printing condition distinction section 120 (step S31). The time delay calculation section 123 computes a time delay by carrying out the multiplication of the time amount set to the printing amount of data stored in the queue table 13 according to the throughput (step S32). The Request-to-Send delay section 122 sends out a Request to Send through the network communication section 11, after delaying sending out of the Request to Send sent from the Request-to-Send section 121 according to the computed time delay (step S33) (step S34). Here, the host equipment 2 which sent out printing conditions sends out printing data to network printer equipment 1 with the shortest latency time of a printout according to the Request to Send which received at the very beginning (step S35).

[0031] Thus, the latency time until it carries out a printout can carry out a printout with the shortest network printer equipment 1, without carrying out setting-out modification of an emulation and each network printer equipments [1-1n] condition monitoring, since it was made to delay the Request to Send sent to host equipment 2 according to the time delay which carried out the multiplication of the time amount set to the already stored printing amount of data according to the throughput, and found it.

[0032]

[Effect of the Invention] This invention can be made to print with the automatic and optimal network printer equipment, without carrying out setting-out modification of an emulation and condition monitoring of each network printer equipment, since only the network printer equipment which can respond to printing conditions from host equipment sends out a Request to Send to host equipment and received printing data, as explained above.

[0033] Moreover, without carrying out setting-out modification of an emulation and condition monitoring of each network printer equipment, since it was made to delay the Request to Send sent out to host equipment according to the time amount according to a self throughput, it can be made to be able to print with the quick network printer equipment of a printing throughput, and compaction of printing processing can be aimed at.

[0034] Moreover, without carrying out setting-out modification of an emulation and condition monitoring of each network printer equipment, since it was made to delay the Request to Send

sent to host equipment according to the already stored printing amount of data, the printing amount of data can make it able to print with the fewest network printer equipment, and can aim at compaction of printing processing.

[0035] Furthermore, without carrying out setting-out modification of an emulation and condition monitoring of each network printer equipment, since it was made to delay the Request to Send sent to host equipment according to the time delay which carried out the multiplication of the time amount set to the already stored printing amount of data according to the throughput, and found it, with the shortest network printer equipment, the latency time until it carries out a printout can carry out a printout, and can aim at compaction of printing processing further.

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the increase in efficiency of the network printer equipment which constitutes a network with host equipment etc. and prints in a record form according to the sent printing data, especially printing processing.

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PRIOR ART

[Description of the Prior Art] The network printer equipment which constitutes a network with host equipment and prints in a record form according to the sent printing data is shown in JP,8-101800,A, JP,8-115184,A, etc. The network printer equipment shown in JP,8-101800,A etc. has connected two or more printer equipments which performed beforehand emulation setting out with host equipments, such as a format of the font classification to be used and printing data, and a paper size to be used, to a network. Moreover, two or more printer equipments are packed as one group by the means of communications of each printer equipment which exchanges information between printer equipment. and the demand from host equipment — responding — the means of communications of one printer equipment in a group — other printer equipments — record — a ****** [being working] — asking — each printer equipment of a group — record — the information on whether to be working or not is transmitted to host equipment.
Compaction of printing processing of printer equipment is in drawing because host equipment carries out a record output request according to the priority given to each printer equipment of a group based on the sent information.
[0003] Moreover, the network printer equipment shown in JP,8-115184,A etc. constitutes a network with two or more printer equipments with two or more server computers and client computers, and if a server computer performs storing of the printing data sent from the client computer, and condition monitoring of each printer equipment and has a demand from a client computer, it sends out the information which shows the storing situation of printing data, and the condition of each printer equipment. A client computer displays the storing situation of printing data, and the condition of printer equipment on a display according to the sent information. An operator chooses the printer equipment which checks the display, is not crowded and is operating in the good condition. And compaction of printing processing of printer equipment is in drawing by a client computer outputting the printing demand it is directed that prints the printing data beforehand sent in and stored in the server computer with selected printer equipment, and making selected printer equipment print it.

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EFFECT OF THE INVENTION

[Effect of the Invention] This invention can be made to print with the automatic and optimal network printer equipment, without carrying out setting-out modification of an emulation and condition monitoring of each network printer equipment, since only the network printer equipment which can respond to printing conditions from host equipment sends out a Request to Send to host equipment and received printing data, as explained above.
[0033] Moreover, without carrying out setting-out modification of an emulation and condition monitoring of each network printer equipment, since it was made to delay the Request to Send sent out to host equipment according to the time amount according to a self throughput, it can be made to be able to print with the quick network printer equipment of a printing throughput, and compaction of printing processing can be aimed at.
[0034] Moreover, without carrying out setting-out modification of an emulation and condition monitoring of each network printer equipment, since it was made to delay the Request to Send sent to host equipment according to the already stored printing amount of data, the printing amount of data can make it able to print with the fewest network printer equipment, and can aim at compaction of printing processing.
[0035] Furthermore, without carrying out setting-out modification of an emulation and condition monitoring of each network printer equipment, since it was made to delay the Request to Send sent to host equipment according to the time delay which carried out the multiplication of the time amount set to the already stored printing amount of data according to the throughput, and found it, with the shortest network printer equipment, the latency time until it carries out a printout can carry out a printout, and can aim at compaction of printing processing further.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] In the above-mentioned network printer equipment, since it is made to operate on the assumption that emulation setting out of the format of the font classification used between the equipment linked to a network and printing data, the paper size to be used is in agreement, for example, when making modification of a form or a change of a font, emulation setting out of the equipment concerning printing had to be changed each time, and it was dramatically troublesome.
[0005] Moreover, although compaction of printing processing of printer equipment is in drawing by making the printer equipment which uses a server computer, is made to display the monitor result on a client computer, is not crowded to an operator, and is operating in the good condition choose in order to supervise the condition of each printer The processing time which starts a monitor etc. in proportion to the number of the printer equipment linked to a network increased, and there was a possibility that the processing time synthetic as a result might be delayed.
[0006] Without making this invention in order to cancel this demerit, and carrying out emulation setting out and condition monitoring of equipment, it is making it print with the always optimal printer equipment, and aims at obtaining the network printer equipment which aims at compaction of printing processing.

[Translation done.]

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MEANS

[Means for Solving the Problem] The network printer equipment concerning this invention It has the network communication section, the network control section, a queue table, a printer controller, and printer engine. The network communication section receives transmission of the various data to the transmission line which constitutes a network, or the various data from a transmission line. The format of printing data that the network control section had the printing condition distinction section and the Request-to-Send section, and the printing condition distinction section has been sent through the network communication section from host equipment, Distinguish whether according to the printing conditions containing paper size, it is printable, and the Request-to-Send section sends out the Request to Send which requires that printing data should be transmitted when printing **** is distinguished in the printing condition distinction section through the network communication section to the host equipment which has sent printing conditions. A queue table carries out sequential storing of the printing data sent through the network communication section from host equipment by sending out a Request to Send in the Request-to-Send section. A printer controller chooses printing data from a queue table according to the sequence which stored printing data, and sends them out to printer engine, and it is characterized by printing printer engine based on selected printing data.
[0008] Moreover, the above-mentioned network control section has the printing condition distinction section, the Request-to-Send section, and the Request-to-Send delay section. The Request to Send which requires that the Request-to-Send section should transmit printing data when printing **** is distinguished in the printing condition distinction section is sent out to the Request-to-Send delay section. After the Request-to-Send delay section is delayed according to the time delay which defined the sent Request to Send according to the throughput beforehand, it is good to send out to the host equipment which has sent printing conditions through the network communication section.
[0009] Moreover, the above-mentioned network-control section has the printing condition distinction section, the Request-to-Send section, the time delay calculation section, and the Request-to-Send delay section, and the time delay calculation section computes a time delay according to the printing amount of data stored in the queue table, and after the Request-to-Send delay section is delayed according to the time delay which computed the Request to Send sent from the Request-to-Send section in the time delay calculation section, it is good [the section] to send out through the network-communication section to the host equipment which has sent printing conditions.
[0010] Furthermore, the above-mentioned network control section has the printing condition distinction section, the Request-to-Send section, the time delay calculation section, and the Request-to-Send delay section. The time delay calculation section computes a time delay by carrying out the multiplication of the time amount beforehand set to the printing amount of data stored in the queue table according to the throughput. After the Request-to-Send delay section is delayed according to the time delay which computed the Request to Send sent from the Request-to-Send section in the time delay calculation section, it is desirable to send out to the host equipment which has sent printing conditions through the network communication section.
[0011]

[Embodiment of the Invention] In the network printer equipment of this invention, a network is constituted from connecting two or more network printer equipments through a transmission line with two or more host equipments, and each network printer equipment has the network communication section, the network control section, a queue table, a printer controller, and printer engine, respectively. The network communication section controls control of the transmit timing for avoiding the collision of the various data on the transmission line which constitutes a network etc., and incorporation of various data. The network control section has the printing condition distinction section and the Request-to-Send section, and it distinguishes [which can print, for example according to the format, the paper size, and the printing amount of data of printing data] whether the printing condition distinction sections are printing conditions sent through the network communication section from host equipment. The Request-to-Send section sends out a Request to Send to the host equipment which has sent printing conditions through the network communication section, when printing **** is distinguished in the printing condition distinction section. A queue table carries out sequential storing of the printing data which it was sent from host equipment and received through the network communication section by sending out a Request to Send in the Request-to-Send section. A printer controller chooses printing data according to the sequence which stored printing data, and sends them out to printer engine. Printer engine is printed in a record form based on the sent printing data.

[0012] The host equipment which carries out a printout in the condition of having constituted the network, with two or more network printer equipments and two or more host equipments as mentioned above is outputted to all the network printer equipments that constitute the network for the printing conditions constituted from the amount of data of the format of the printing data which self is treating, a paper size to output, and printing data etc. It distinguishes whether the printing condition distinction section of each network printer equipment is printable according to the printing conditions sent through the network communication section. The Request-to-Send section sends out a Request to Send through the network communication section, when printing **** is distinguished in the printing condition distinction section. Here, the host equipment which sent out printing conditions sends out printing data to the network printer equipment which is the delivery origin of the Request to Send which received at the very beginning. Thus, the automatic and optimal network printer equipment can be made to print, without carrying out setting-out modification of an emulation and condition monitoring of each network printer equipment, since only the network printer equipment which can respond to the printing conditions of host equipment sends out a Request to Send to host equipment and received printing data.

[0013] Although the printout is carried out with the network printer equipment which can respond to the printing conditions of host equipment above, it can respond to printing conditions and a throughput can carry out a printout with quick network printer equipment.

[0014] In this case, the Request-to-Send delay section other than the printing condition distinction section and the Request-to-Send section is prepared in the network control section of each network printer equipment, and the Request-to-Send section sends out a Request to Send to the Request-to-Send delay section, when printing **** is distinguished in the printing condition distinction section. The Request-to-Send delay section is sent out through the network communication section, after delaying sending out of the Request to Send sent from the Request-to-Send section according to the time delay beforehand defined according to printing throughputs, such as self printer engine. Here, the host equipment which sent out printing conditions sends out printing data to the quickest network printer equipment of a printing throughput according to the Request to Send which received at the very beginning. Thus, it can be made to print with the quick network printer equipment of a printing throughput, without carrying out setting-out modification of an emulation and condition monitoring of each network printer equipment, since it was made to delay the Request to Send sent out to host equipment according to the time amount according to a self throughput.

[0015] Although it corresponds to the printing conditions of host equipment above and a printout is carried out with the quick network printer equipment of a throughput, the printing amount of data which corresponded to printing conditions and was stored in the queue table can carry out

a printout with little network printer equipment.
[0016] In this case, the printing condition distinction section, and the time delay calculation section and the Request-to-Send delay section other than the Request-to-Send section are prepared in the network control section of each network printer equipment, the time delay calculation section computes a time delay according to the printing amount of data stored in the queue table, and the Request-to-Send delay section is sent out through the network communication section, after delaying sending out of the Request to Send sent from the Request-to-Send section according to the computed time delay. Thus, it can be made to print with network printer equipment with few amounts of printing data, without carrying out setting-out modification of an emulation and condition monitoring of each network printer equipment, since it was made to delay the Request to Send sent to host equipment according to the already stored printing amount of data.
[0017] Although the printing amount of data which corresponds to the printing conditions of host equipment above, and has already been stored carries out a printout with the fewest network printer equipment, the latency time until it carries out a printout can carry out a printout with the shortest network printer equipment.
[0018] In this case, the time delay calculation section of each network printer equipment computes a time delay by carrying out the multiplication of the time amount set to the printing amount of data stored in the queue table according to the throughput. The Request-to-Send delay section is sent out through the network communication section, after delaying sending out of the Request to Send sent from the Request-to-Send section according to the computed time delay. Here, the host equipment which sent out printing conditions sends out printing data to network printer equipment with the shortest latency time of a printout according to the Request to Send which received at the very beginning. Thus, the latency time until it carries out a printout can carry out a printout with the shortest network printer equipment, without carrying out setting-out modification of an emulation and condition monitoring of each network printer equipment, since it was made to delay the Request to Send sent to host equipment according to the value which carried out the multiplication of the time amount set to the already stored printing amount of data according to the throughput, and found it.

[Translation done.]

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EXAMPLE

[Example] Drawing 1 is the block diagram showing the configuration of one example of this invention. As shown in drawing, two or more network printer equipments 1-1n constitute a network through a transmission line 3 with two or more host equipments 2-2n. And each network printer equipments 1-1n have the network communication section 11, the network control section 12, the queue table 13, a printer controller 14, and printer engine 15. The network communication section 11 carries out incorporation of various data etc., when control of the transmit timing for avoiding the collision of the various data on the transmission line 3 which constitutes the network etc., and the reception place discernment ID for example, from a transmission line 3 are checked and it is in agreement with the discernment ID of a local station. It distinguishes whether the network control section 12 has the printing condition distinction section 120 and the Request-to-Send section 121, and can print the printing condition distinction section 120 according to for example, the transmitting agency discernment ID of the printing conditions sent through the network communication section 11 from the host equipments 2-2n, the format of the printing data ID and printing data, a paper size, and the printing amount of data. The Request-to-Send section 121 sends out the Request to Send which added the discernment ID of a local station through the network communication section 11 to the transmitting agency discernment ID and the printing data ID of printing conditions, when printing **** is distinguished in the printing condition distinction section 120. The queue table 13 carries out sequential storing of the printing data which it was sent from the host equipments 2-2n, and were received through the network communication section 11 by sending out a Request to Send in the Request-to-Send section 121. A printer controller 14 chooses printing data according to the sequence which stored printing data, and sends them out to printer engine 15. Printer engine 15 is printed in a record form based on the sent printing data.
[0020] Actuation of the network printer equipments 1-1n constituted as mentioned above is explained using the transition diagram of drawing 2 of operation.
[0021] The host equipment 2 which carries out a printout as shown in drawing is outputted to the printing data ID list for identifying the amount of data of the format of the printing data which self is treating, a paper size to output, and printing data, and printing data to all the network printer equipments 1-1n that constitute the network for the printing conditions constituted from transmitting agency discernment ID of a local station (step S1). It distinguishes whether the each network printer equipments [1-1n] printing condition distinction section 120 is printable according to the printing conditions sent through the network communication section 11 (step S2). Here, when the printing condition distinction section 120 of network printer equipment 1 distinguishes printing ****, the Request-to-Send section 121 of network printer equipment 1 sends out the Request to Send which added the discernment ID of a local station through the network communication section 11 to the transmitting agency discernment ID and the printing data ID of printing conditions (step S3). And the host equipment 2 which sent out printing conditions checks the transmitting agency discernment ID and the printing data ID of the Request to Send which received at the very beginning, and sends out the printing data corresponding to the printing data ID to the network printer equipment 1 of delivery origin (step S4).

[0022] Thus, the automatic and optimal network printer equipment 1 can be made to print, without carrying out setting-out modification of an emulation and each network printer equipments [1-1n] condition monitoring, since only the network printer equipment 1 which can respond to printing conditions from host equipment 2 sends out a Request to Send to host equipment 2 and received printing data.
[0023] Although the actuation when carrying out a printout with the network printer equipment 1 which can respond to the printing conditions of host equipment 2 above was explained To drawing 3 So that it may be shown Sending out of the Request to Send sent from the Request-to-Send section 121 according to the time delay beforehand set to the each network printer equipments [1-1n] network control section 12 according to the printing throughput of the printer engine 15 grade of self besides the printing condition distinction section 120 and the Request-to-Send section 121 By forming the Request-to-Send delay section 122 to delay, it can respond to each host equipments [2-2n] printing conditions, and a throughput can carry out a printout with the quick network printer equipments 1-1n.
[0024] In this case, as shown in the transition diagram of drawing 4 of operation, the Request-to-Send section 121 sends out the Request to Send which added the discernment ID of a local station to the transmitting agency discernment ID and the printing data ID of printing conditions to the Request-to-Send delay section 122, when printing **** is distinguished in the printing condition distinction section 120 (step S21). The Request-to-Send delay section 122 sends out a Request to Send through the network communication section 11, after delaying sending out of the Request to Send sent from the Request-to-Send section 121 according to the time delay beforehand defined according to the printing throughput of the printer engine 15 grade of self (step S22) (step S23). Here, the host equipment 2 which sent out printing conditions checks the transmitting agency discernment ID and the printing data ID of the Request to Send which received at the very beginning, and sends out the printing data corresponding to the printing data ID to the network printer equipment 1 of delivery origin (step S24).
[0025] Thus, it can be made to print with the quick network printer equipment 1 of a printing throughput, without carrying out setting-out modification of an emulation and each network printer equipments [1-1n] condition monitoring, since it was made to delay the Request to Send sent out to host equipment 2 according to the time amount according to a self throughput.
[0026] Although the actuation when being able to respond to the printing conditions of host equipment 2 above, and carrying out a printout with the quick network printer equipment 1 of a throughput was explained As shown in drawing 5 In the each network printer equipments [1-1n] network control section 12 Sending out of the Request to Send sent from the Request-to-Send section 121 according to the printing condition distinction section 120, the time delay calculation section 123 which computes a time delay according to the printing amount of data stored in the queue table 13 other than the Request-to-Send section 121, and the computed time delay By forming the Request-to-Send delay section 122 to delay, the printing amount of data which corresponded to each host equipments [2-2n] printing conditions, and was stored in the queue table 13 can carry out a printout with little network printer equipments 1-1n.
[0027] In this case, as shown in the transition diagram of drawing 6 of operation, the Request-to-Send section 121 sends out the Request to Send which added the discernment ID of a local station to the transmitting agency discernment ID and the printing data ID of printing conditions to the Request-to-Send delay section 122, when printing **** is distinguished in the printing condition distinction section 120 (step S31). The time delay calculation section 123 computes a time delay according to the printing amount of data stored in the queue table 13 (step S32). The Request-to-Send delay section 122 sends out a Request to Send through the network communication section 11, after delaying sending out of the Request to Send sent from the Request-to-Send section 121 according to the computed time delay (step S33) (step S34). Here, the host equipment 2 which sent out printing conditions sends out printing data to network printer equipment 1 with few amounts of the printing data already stored according to the Request to Send which received at the very beginning (step S35).
[0028] Thus, it can be made to print with network printer equipment 1 with few amounts of printing data, without carrying out setting-out modification of an emulation and condition

monitoring of each network printer equipment, since it was made to delay the Request to Send sent to host equipment 2 according to the already stored printing amount of data.
[0029] Although actuation in case the printing amount of data which can respond to the printing conditions of host equipment 2 above, and has already been stored carries out a printout with the fewest network printer equipment 1 was explained By carrying out the multiplication of the time amount set to the printing amount of data stored in the queue table 13 at the above-mentioned time delay calculation section 123 shown in drawing 5 according to the throughput, and making a time delay compute The latency time until it carries out a printout can carry out a printout with the shortest network printer equipment 1.
[0030] In this case, as shown in the transition diagram of drawing 6 of operation, the Request-to-Send section 121 sends out the Request to Send which added the discernment ID of a local station to the transmitting agency discernment ID and the printing data ID of printing conditions to the Request-to-Send delay section 122, when printing **** is distinguished in the printing condition distinction section 120 (step S31). The time delay calculation section 123 computes a time delay by carrying out the multiplication of the time amount set to the printing amount of data stored in the queue table 13 according to the throughput (step S32). The Request-to-Send delay section 122 sends out a Request to Send through the network communication section 11, after delaying sending out of the Request to Send sent from the Request-to-Send section 121 according to the computed time delay (step S33) (step S34). Here, the host equipment 2 which sent out printing conditions sends out printing data to network printer equipment 1 with the shortest latency time of a printout according to the Request to Send which received at the very beginning (step S35).
[0031] Thus, the latency time until it carries out a printout can carry out a printout with the shortest network printer equipment 1, without carrying out setting-out modification of an emulation and each network printer equipments [1-1n] condition monitoring, since it was made to delay the Request to Send sent to host equipment 2 according to the time delay which carried out the multiplication of the time amount set to the already stored printing amount of data according to the throughput, and found it.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing the configuration of the example of this invention.
[Drawing 2] It is the transition diagram of operation showing actuation of the above-mentioned example.
[Drawing 3] It is the block diagram showing the configuration of the 2nd example of this invention.
[Drawing 4] It is the transition diagram of operation showing actuation of the 2nd example.
[Drawing 5] It is the block diagram showing the configuration of the 3rd and 4th examples of this invention.
[Drawing 6] It is the transition diagram of operation showing actuation of the 3rd and 4th examples.
[Description of Notations]
1-1n Network printer equipment
11 Network Communication Section
12 Network Control Section
120 Printing Condition Distinction Section
121 Request-to-Send Section
122 Request-to-Send Delay Section
123 Time Delay Calculation Section
13 Queue Table
14 Printer Controller
15 Printer Engine
2-2n Host equipment
3 Transmission Line

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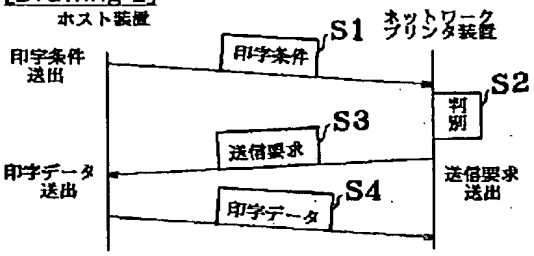
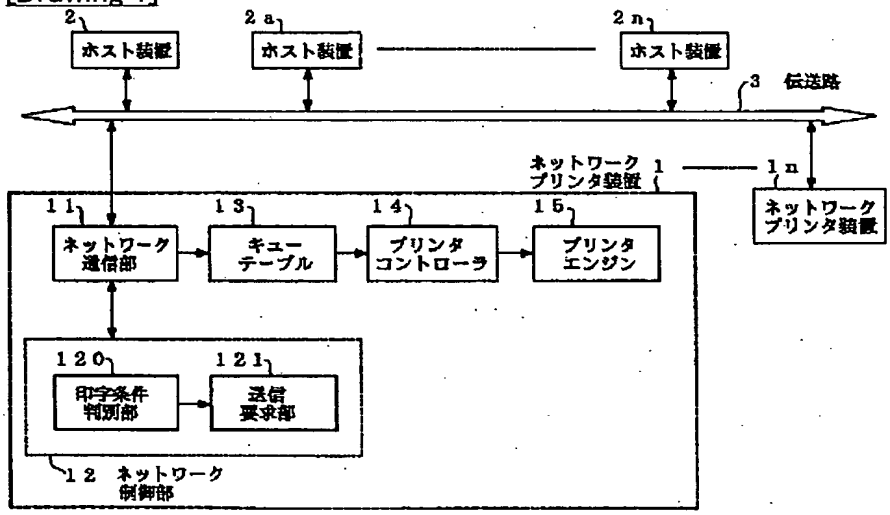
DRAWINGS

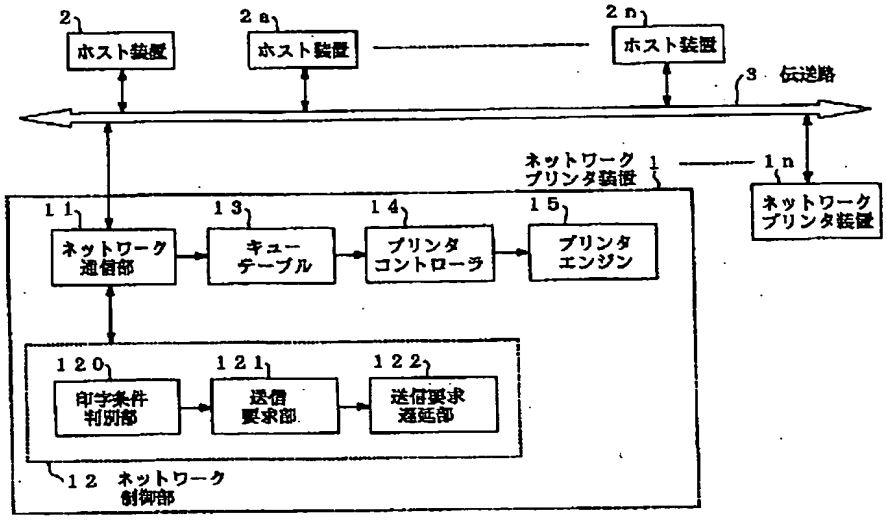
[Drawing 2]



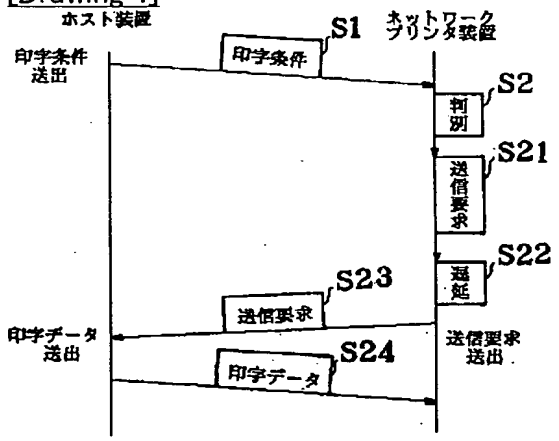
[Drawing 1]



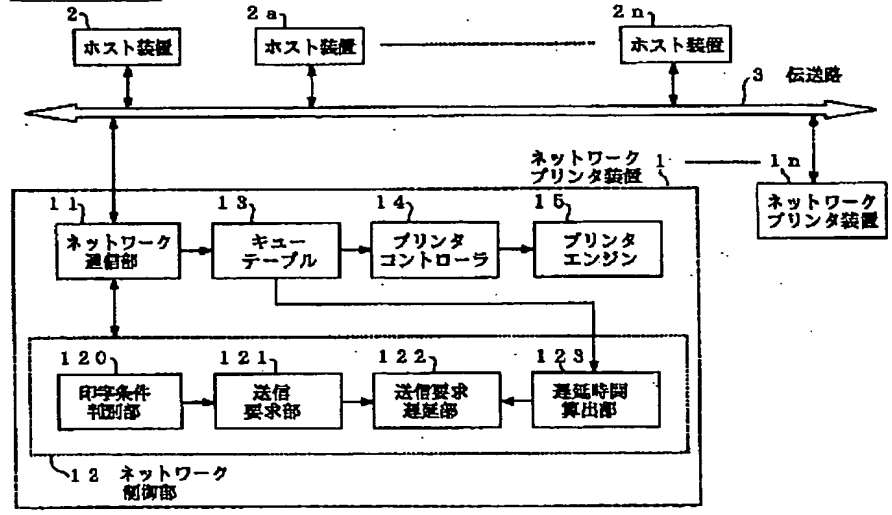
[Drawing 3]



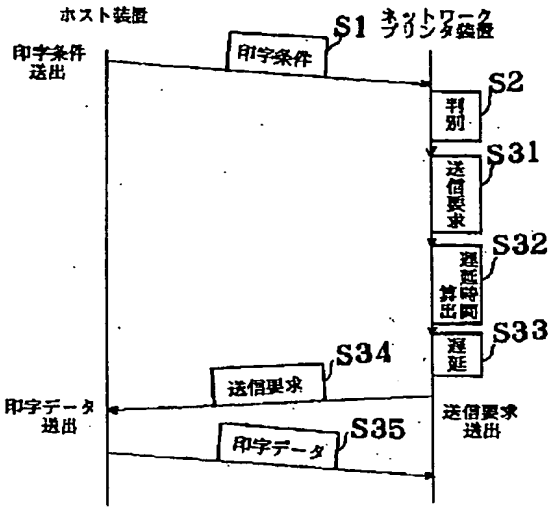
[Drawing 4]



[Drawing 5]



[Drawing 6]



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	13/00	３５７		13/00	３５７Ａ

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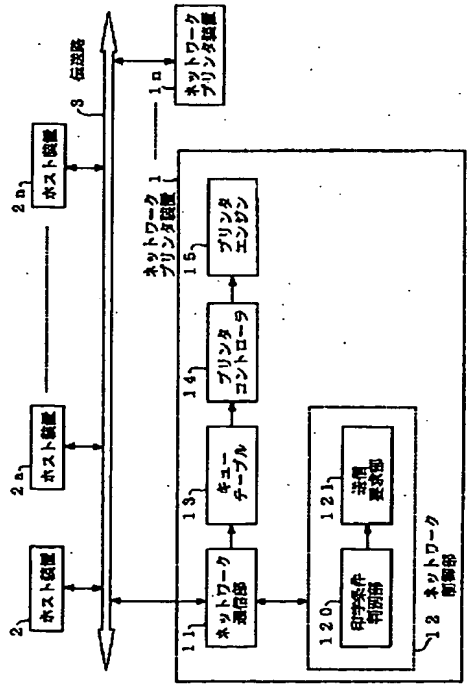
(54)【発明の名称】　ネットワークプリンタ装置

(57)【要約】
【課題】用紙の変更又はフォントの変更等するときは印字に係る装置のエミュレーション設定をその都度変更する必要があった。
【解決手段】印字出力するホスト装置２は扱っている印字データの形式と出力したい用紙サイズ等を含む印字条件を全てのネットワークプリンタ装置１に対して出力する。各ネットワークプリンタ装置１の印字条件判別部１２０はネットワーク通信部１１を介して送られてきた印字条件に従って印字が可能か否かを判別する。送信要求部１２１は印字可能を判別したときは送信要求をネットワーク通信部１１を介して送出する。それを受けたホスト装置２は一番最初に受信した送信要求の送り元であるネットワークプリンタ装置１に印字データを送出する。



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【特許請求の範囲】

【請求項１】　ネットワーク通信部とネットワーク制御部とキューテーブルとプリンタコントローラ及びプリンタエンジンとを有し、ネットワーク通信部はネットワークを構成する伝送路への各種データの送信又は伝送路からの各種データを受信し、ネットワーク制御部は印字条件判別部と送信要求部とを有し、印字条件判別部はホスト装置からネットワーク通信部を介して送られてきた印字データの形式、紙サイズを含む印字条件に従って印字が可能か否かを判別し、送信要求部は印字条件判別部で印字可能を判別したときは印字データを送信することを要求する送信要求を印字条件を送ってきたホスト装置にネットワーク通信部を介して送出し、キューテーブルは送信要求部で送信要求を送出することによってホスト装置からネットワーク通信部を介して送られてきた印字データを順次格納し、プリンタコントローラは印字データを格納した順番に従って印字データをキューテーブルから選択してプリンタエンジンに送出し、プリンタエンジンは選択した印字データに基づいて印字することを特徴とするネットワークプリンタ装置。

【請求項２】　上記ネットワーク制御部は印字条件判別部と送信要求部及び送信要求遅延部とを有し、送信要求部は印字条件判別部で印字可能を判別したときは印字データを送信することを要求する送信要求を送信要求遅延部に送出し、送信要求遅延部は送られてきた送信要求をあらかじめ処理能力に応じて定めた遅延時間に従って遅延してから印字条件を送ってきたホスト装置へネットワーク通信部を介して送出する請求項１記載のネットワークプリンタ装置。

【請求項３】　上記ネットワーク制御部は印字条件判別部と送信要求部と遅延時間算出部及び送信要求遅延部とを有し、遅延時間算出部はキューテーブルに格納された印字データ量に応じて遅延時間を算出し、送信要求遅延部は送信要求部から送られてきた送信要求を遅延時間算出部で算出した遅延時間に従って遅延してから印字条件を送ってきたホスト装置へネットワーク通信部を介して送出する請求項１記載のネットワークプリンタ装置。

【請求項４】　上記ネットワーク制御部は印字条件判別部と送信要求部と遅延時間算出部及び送信要求遅延部とを有し、遅延時間算出部はキューテーブルに格納された印字データ量にあらかじめ処理能力に応じて定めた時間を乗算して遅延時間を算出し、送信要求遅延部は送信要求部から送られてきた送信要求を遅延時間算出部で算出した遅延時間に従って遅延してから印字条件を送ってきたホスト装置へネットワーク通信部を介して送出する請求項１記載のネットワークプリンタ装置。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】この発明は、ホスト装置等とのネットワークを構成し、送られてきた印字データに従って記録用紙に印字をおこなうネットワークプリンタ装置、特に印字処理の効率化に関するものである。

2

【０００２】

【従来の技術】ホスト装置とのネットワークを構成し、送られてきた印字データに従って記録用紙に印字をおこなうネットワークプリンタ装置が、例えば特開平8-101800号公報や特開平8-115184号公報等に示されている。特開平8-101800号公報等に示されたネットワークプリンタ装置は、使用するフォント種別、印字データの形式及び使用する用紙サイズ等のホスト装置とのエミュレーション設定をあらかじめおこなった複数のプリンタ装置をネットワークに接続している。また、プリンタ装置間で情報のやり取りをおこなう各プリンタ装置の通信手段によって複数のプリンタ装置を１グループとしてまとめている。そして、ホスト装置からの要求に応じてグループ内の1台のプリンタ装置の通信手段により他のプリンタ装置が記録動作中か否かを問い合わせ、グループの各プリンタ装置が記録動作中か否かの情報をホスト装置に送信する。ホスト装置は送られてきた情報に基づいてグループの各プリンタ装置につけた優先順位に従って記録出力要求をすることでプリンタ装置の印字処理の短縮を図っている。

【０００３】また、特開平8-115184号公報等に示されたネットワークプリンタ装置は、複数のサーバコンピュータとクライアントコンピュータと共に複数のプリンタ装置によってネットワークを構成し、サーバコンピュータはクライアントコンピュータから送られてきた印字データの格納と各プリンタ装置の状態監視をおこない、クライアントコンピュータから要求があると印字データの格納状況と各プリンタ装置の状態を示す情報を送出する。クライアントコンピュータは送られてきた情報に従って表示部に印字データの格納状況とプリンタ装置の状態を表示する。オペレータはその表示を確認して混雑していなく良好な状態で動作しているプリンタ装置を選択する。そして、クライアントコンピュータは選択されたプリンタ装置によってあらかじめサーバコンピュータに送りこんで格納した印字データを印字するよう指示する印字要求を出力し、選択されたプリンタ装置に印字させることでプリンタ装置の印字処理の短縮を図っている。

【０００４】

【発明が解決しようとする課題】上記ネットワークプリンタ装置においては、ネットワークに接続している装置間で使用するフォント種別、印字データの形式及び使用する用紙サイズ等のエミュレーション設定が一致しているのを前提に動作させているため、例えば、用紙の変更又はフォントの変更等するときは印字に係る装置のエミュレーション設定をその都度変更しなければならなく非常に煩わしかった。

【０００５】また、各プリンタの状態を監視するためにサーバコンピュータを使用し、その監視結果をクライア

ントコンピュータに表示させ、オペレータに混雑していなく良好な状態で動作しているプリンタ装置を選択させることでプリンタ装置の印字処理の短縮を図っているが、ネットワークに接続したプリンタ装置の台数に比例して監視等にかかる処理時間が増大し、結果的に総合的な処理時間が遅延する恐れがあった。

【０００６】この発明はかかる短所を解消するためになされたものであり、エミュレーション設定と装置の状態監視をすること無く、常に最適なプリンタ装置によって印字させることで、印字処理の短縮を図るネットワークプリンタ装置を得ることを目的とするものである。

【０００７】

【課題を解決するための手段】この発明に係るネットワークプリンタ装置は、ネットワーク通信部とネットワーク制御部とキューテーブルとプリンタコントローラ及びプリンタエンジンとを有し、ネットワーク通信部はネットワークを構成する伝送路への各種データの送信又は伝送路からの各種データを受信し、ネットワーク制御部は印字条件判別部と送信要求部とを有し、印字条件判別部はホスト装置からネットワーク通信部を介して送られてきた印字データの形式、紙サイズを含む印字条件に従って印字が可能か否かを判別し、送信要求部は印字条件判別部で印字可能を判別したときは印字データを送信することを要求する送信要求を印字条件を送ってきたホスト装置にネットワーク通信部を介して送出し、キューテーブルは送信要求部で送信要求を送出することによってホスト装置からネットワーク通信部を介して送られてきた印字データを順次格納し、プリンタコントローラは印字データを格納した順番に従って印字データをキューテーブルから選択してプリンタエンジンに送出し、プリンタエンジンは選択した印字データに基づいて印字することを特徴とする。

【０００８】また、上記ネットワーク制御部は印字条件判別部と送信要求部及び送信要求遅延部とを有し、送信要求部は印字条件判別部で印字可能を判別したときは印字データを送信することを要求する送信要求を送信要求遅延部に送出し、送信要求遅延部は送られてきた送信要求をあらかじめ処理能力に応じて定めた遅延時間に従って遅延してから印字条件を送ってきたホスト装置へネットワーク通信部を介して送出すると良い。

【０００９】また、上記ネットワーク制御部は印字条件判別部と送信要求部と遅延時間算出部及び送信要求遅延部とを有し、遅延時間算出部はキューテーブルに格納された印字データ量に応じて遅延時間を算出し、送信要求遅延部は送信要求部から送られてきた送信要求を遅延時間算出部で算出した遅延時間に従って遅延してから印字条件を送ってきたホスト装置へネットワーク通信部を介して送出すると良い。

【００１０】更に、上記ネットワーク制御部は印字条件判別部と送信要求部と遅延時間算出部及び送信要求遅延部とを有し、遅延時間算出部はキューテーブルに格納された印字データ量にあらかじめ処理能力に応じて定めた時間を乗算して遅延時間を算出し、送信要求遅延部は送信要求部から送られてきた送信要求を遅延時間算出部で算出した遅延時間に従って遅延してから印字条件を送ってきたホスト装置へネットワーク通信部を介して送出することが望ましい。

【００１１】

【発明の実施の形態】この発明のネットワークプリンタ装置においては、複数のネットワークプリンタ装置を複数のホスト装置と共に伝送路を介して接続することでネットワークを構成し、それぞれ各ネットワークプリンタ装置は、ネットワーク通信部とネットワーク制御部とキューテーブルとプリンタコントローラ及びプリンタエンジンとを有する。ネットワーク通信部は例えばネットワークを構成する伝送路上の各種データの衝突等を避けるための送信タイミングの制御及び各種データの取り込みの制御をする。ネットワーク制御部は印字条件判別部と送信要求部とを有し、印字条件判別部はホスト装置からのネットワーク通信部を介して送られてきた印字条件である例えば印字データの形式と用紙サイズ及び印字データ量に従って印字が可能か否かを判別する。送信要求部は印字条件判別部で印字可能を判別したときは送信要求をネットワーク通信部を介して印字条件を送ってきたホスト装置に送出する。キューテーブルは送信要求部で送信要求を送出することによってホスト装置から送られネットワーク通信部を介して受信した印字データを順次格納する。プリンタコントローラは印字データを格納した順番に従って印字データを選択してプリンタエンジンに送出する。プリンタエンジンは送られてきた印字データに基づいて記録用紙に印字する。

【００１２】上記のように複数のネットワークプリンタ装置と複数のホスト装置でネットワークを構成した状態において、印字出力するホスト装置は例えば自己が扱っている印字データの形式と出力したい用紙サイズ及び印字データのデータ量等から構成した印字条件をネットワークを構成している全てのネットワークプリンタ装置に対して出力する。各ネットワークプリンタ装置の印字条件判別部はネットワーク通信部を介して送られてきた印字条件に従って印字が可能か否かを判別する。送信要求部は印字条件判別部で印字可能を判別したときは送信要求をネットワーク通信部を介して送出する。ここで、印字条件を送出したホスト装置は一番最初に受信した送信要求の送り元であるネットワークプリンタ装置に印字データを送出する。このようにして、ホスト装置の印字条件に対応することができるネットワークプリンタ装置のみホスト装置に送信要求を送出し、印字データを受信するようにしたため、エミュレーションの設定変更や各ネットワークプリンタ装置の状態監視をすること無く、自動で最適なネットワークプリンタ装置に印字させること

ができる。

【００１３】上記ではホスト装置の印字条件に対応することができるネットワークプリンタ装置によって印字出力しているが、印字条件に対応しかつ処理能力が速いネットワークプリンタ装置によって印字出力することができる。

【００１４】この場合、各ネットワークプリンタ装置のネットワーク制御部に印字条件判別部と送信要求部の他に送信要求遅延部を設け、送信要求部は印字条件判別部で印字可能を判別したときは送信要求を送信要求遅延部に送出する。送信要求遅延部は例えば自己のプリンタエンジン等の印字処理能力に応じてあらかじめ定めた遅延時間に従って送信要求部から送られてきた送信要求の送出を遅延させた後、ネットワーク通信部を介して送出する。ここで、印字条件を送出したホスト装置は一番最初に受信した送信要求に従って印字処理能力の一番速いネットワークプリンタ装置に印字データを送出する。このようにして、自己の処理能力に応じた時間に従ってホスト装置に送出する送信要求を遅延させるようにしたため、エミュレーションの設定変更や各ネットワークプリンタ装置の状態監視をすること無く、印字処理能力の速いネットワークプリンタ装置によって印字させることができる。

【００１５】上記ではホスト装置の印字条件に対応し、かつ処理能力の速いネットワークプリンタ装置によって印字出力させているが、印字条件に対応しかつキューテーブルに格納された印字データ量が少ないネットワークプリンタ装置によって印字出力することができる。

【００１６】この場合、各ネットワークプリンタ装置のネットワーク制御部に印字条件判別部と送信要求部の他に遅延時間算出部と送信要求遅延部とを設け、遅延時間算出部はキューテーブルに格納された印字データ量に応じて遅延時間を算出し、送信要求遅延部は算出した遅延時間に従って送信要求部から送られてきた送信要求の送出を遅延させた後ネットワーク通信部を介して送出する。このようにして、既に格納している印字データ量に従ってホスト装置に送る送信要求を遅延させるようにしたため、エミュレーションの設定変更や各ネットワークプリンタ装置の状態監視をすること無く、印字データの量が一番少ないネットワークプリンタ装置によって印字させることができる。

【００１７】上記ではホスト装置の印字条件に対応し、かつ既に格納している印字データ量が一番少ないネットワークプリンタ装置によって印字出力させているが、印字出力するまでの待ち時間が一番短いネットワークプリンタ装置によって印字出力することができる。

【００１８】この場合、各ネットワークプリンタ装置の遅延時間算出部はキューテーブルに格納された印字データ量に処理能力に応じて定めた時間を乗算して遅延時間を算出する。送信要求遅延部は算出した遅延時間に従って送信要求部から送られてきた送信要求の送出を遅延させた後ネットワーク通信部を介して送出する。ここで、印字条件を送出したホスト装置は一番最初に受信した送信要求に従って印字出力の待ち時間が一番短いネットワークプリンタ装置に印字データを送出する。このようにして、既に格納している印字データ量に処理能力に応じて定めた時間を乗算して求めた値に従ってホスト装置に送る送信要求を遅延させるようにしたため、エミュレーションの設定変更や各ネットワークプリンタ装置の状態監視をすること無く、印字出力するまでの待ち時間が一番短いネットワークプリンタ装置によって印字出力することができる。

【００１９】

【実施例】図１はこの発明の一実施例の構成を示すブロック図である。図に示すように複数のネットワークプリンタ装置１～１ｎは、複数のホスト装置２～２ｎと共に伝送路３を介してネットワークを構成する。そして、各ネットワークプリンタ装置１～１ｎは、ネットワーク通信部１１とネットワーク制御部１２とキューテーブル１３とプリンタコントローラ１４及びプリンタエンジン１５とを有する。ネットワーク通信部１１は例えばネットワークを構成している伝送路３上での各種データの衝突等を避けるための送信タイミングの制御及び伝送路３上からの受信先識別ＩＤを確認して自局の識別ＩＤと一致したときに各種データの取り込み等をする。ネットワーク制御部１２は印字条件判別部１２０と送信要求部１２１とを有し、印字条件判別部１２０はホスト装置２～２ｎからのネットワーク通信部１１を介して送られてきた印字条件の例えば送信元識別ＩＤと印字データＩＤと印字データの形式と用紙サイズ及び印字データ量に従って印字が可能か否かを判別する。送信要求部１２１は印字条件判別部１２０で印字可能を判別したときは印字条件の送信元識別ＩＤと印字データＩＤに自局の識別ＩＤを追加した送信要求をネットワーク通信部１１を介して送出する。キューテーブル１３は送信要求部１２１で送信要求を送出することによってホスト装置２～２ｎから送られネットワーク通信部１１を介して受信した印字データを順次格納する。プリンタコントローラ１４は印字データを格納した順番に従って印字データを選択してプリンタエンジン１５に送出する。プリンタエンジン１５は送られてきた印字データに基づいて記録用紙に印字する。

【００２０】上記のように構成したネットワークプリンタ装置１～１ｎの動作を図２の動作遷移図を用いて説明する。

【００２１】図に示すように印字出力するホスト装置２は例えば自己が扱っている印字データの形式、出力したい用紙サイズ及び印字データのデータ量、印字データを識別するための印字データＩＤ並びに自局の送信元識別ＩＤから構成した印字条件をネットワークを構成してい

る全てのネットワークプリンタ装置１～１ｎに対して出力する（ステップＳ１）。各ネットワークプリンタ装置１～１ｎの印字条件判別部１２０はネットワーク通信部１１を介して送られてきた印字条件に従って印字が可能か否かを判別する（ステップＳ２）。ここで、例えばネットワークプリンタ装置１の印字条件判別部１２０が印字可能を判別した場合、ネットワークプリンタ装置１の送信要求部１２１は印字条件の送信元識別ＩＤと印字データＩＤに自局の識別ＩＤを追加した送信要求をネットワーク通信部１１を介して送出する（ステップＳ３）。そして、印字条件を送出したホスト装置２は一番最初に受信した送信要求の送信元識別ＩＤと印字データＩＤを確認し、送り元のネットワークプリンタ装置１に対して印字データＩＤに対応する印字データを送出する（ステップＳ４）。

【００２２】このようにして、ホスト装置２からの印字条件に対応することができるネットワークプリンタ装置１のみホスト装置２に送信要求を送出し、印字データを受信するようにしたため、エミュレーションの設定変更や各ネットワークプリンタ装置１～１ｎの状態監視をすること無く、自動で最適なネットワークプリンタ装置１に印字させることができる。

【００２３】上記ではホスト装置２の印字条件に対応することができるネットワークプリンタ装置１によって印字出力するときの動作について説明したが、図３に示すように各ネットワークプリンタ装置１～１ｎのネットワーク制御部１２に印字条件判別部１２０と送信要求部１２１の他に自己のプリンタエンジン１５等の印字処理能力に応じてあらかじめ定めた遅延時間に従って送信要求部１２１から送られてきた送信要求の送出を遅延させる送信要求遅延部１２２を設けることによって、各ホスト装置２～２ｎの印字条件に対応しかつ処理能力が速いネットワークプリンタ装置１～１ｎによって印字出力することができる。

【００２４】この場合、図４の動作遷移図に示すように送信要求部１２１は印字条件判別部１２０で印字可能を判別したときは印字条件の送信元識別ＩＤと印字データＩＤに自局の識別ＩＤを追加した送信要求を送信要求遅延部１２２に送出する（ステップＳ２１）。送信要求遅延部１２２は例えば自己のプリンタエンジン１５等の印字処理能力に応じてあらかじめ定めた遅延時間に従って送信要求部１２１から送られてきた送信要求の送出を遅延させた後（ステップＳ２２）、ネットワーク通信部１１を介して送信要求を送出する（ステップＳ２３）。ここで、印字条件を送出したホスト装置２は一番最初に受信した送信要求の送信元識別ＩＤと印字データＩＤを確認し、送り元のネットワークプリンタ装置１に対して印字データＩＤに対応する印字データを送出する（ステップＳ２４）。

【００２５】このようにして、自己の処理能力に応じた時間に従ってホスト装置２に送出する送信要求を遅延させるようにしたため、エミュレーションの設定変更や各ネットワークプリンタ装置１～１ｎの状態監視をすること無く、印字処理能力の速いネットワークプリンタ装置１によって印字させることができる。

【００２６】上記ではホスト装置２の印字条件に対応することができ、かつ処理能力の速いネットワークプリンタ装置１によって印字出力させるときの動作について説明したが、図５に示すように、各ネットワークプリンタ装置１～１ｎのネットワーク制御部１２に印字条件判別部１２０と送信要求部１２１の他にキューテーブル１３に格納された印字データ量に応じて遅延時間を算出する遅延時間算出部１２３と算出した遅延時間に従って送信要求部１２１から送られてきた送信要求の送出を遅延させる送信要求遅延部１２２とを設けることによって、各ホスト装置２～２ｎの印字条件に対応しかつキューテーブル１３に格納された印字データ量が少ないネットワークプリンタ装置１～１ｎによって印字出力することができる。

【００２７】この場合、図６の動作遷移図に示すように送信要求部１２１は印字条件判別部１２０で印字可能を判別したときは印字条件の送信元識別ＩＤと印字データＩＤに自局の識別ＩＤを追加した送信要求を送信要求遅延部１２２に送出する（ステップＳ３１）。遅延時間算出部１２３はキューテーブル１３に格納された印字データ量に応じて遅延時間を算出する（ステップＳ３２）。送信要求遅延部１２２は算出した遅延時間に従って送信要求部１２１から送られてきた送信要求の送出を遅延させた後（ステップＳ３３）、ネットワーク通信部１１を介して送信要求を送出する（ステップＳ３４）。ここで、印字条件を送出したホスト装置２は一番最初に受信した送信要求に従って既に格納された印字データの量が一番少ないネットワークプリンタ装置１に印字データを送出する（ステップＳ３５）。

【００２８】このようにして、既に格納している印字データ量に従ってホスト装置２に送る送信要求を遅延させるようにしたため、エミュレーションの設定変更や各ネットワークプリンタ装置の状態監視をすること無く、印字データの量が一番少ないネットワークプリンタ装置１によって印字させることができる。

【００２９】上記ではホスト装置２の印字条件に対応することができ、かつ既に格納している印字データ量が一番少ないネットワークプリンタ装置１によって印字出力するときの動作について説明したが、図５に示す上記遅延時間算出部１２３にキューテーブル１３に格納された印字データ量に処理能力に応じて定めた時間を乗算して遅延時間を算出させることによって、印字出力するまでの待ち時間が一番短いネットワークプリンタ装置１によって印字出力することができる。

【００３０】この場合、図６の動作遷移図に示すように

送信要求部１２１は印字条件判別部１２０で印字可能を判別したときは印字条件の送信元識別ＩＤと印字データＩＤに自局の識別ＩＤを追加した送信要求を送信要求遅延部１２２に送出する（ステップＳ３１）。遅延時間算出部１２３はキューテーブル１３に格納された印字データ量に処理能力に応じて定めた時間を乗算して遅延時間を算出する（ステップＳ３２）。送信要求遅延部１２２は算出した遅延時間に従って送信要求部１２１から送られてきた送信要求の送出を遅延させた後（ステップＳ３３）、ネットワーク通信部１１を介して送信要求を送出する（ステップＳ３４）。ここで、印字条件を送出したホスト装置２は一番最初に受信した送信要求に従って印字出力の待ち時間が一番短いネットワークプリンタ装置１に印字データを送出する（ステップＳ３５）。

【００３１】このようにして、既に格納している印字データ量に処理能力に応じて定めた時間を乗算して求めた遅延時間に従ってホスト装置２に送る送信要求を遅延させるようにしたため、エミュレーションの設定変更や各ネットワークプリンタ装置１～１ｎの状態監視をすること無く、印字出力するまでの待ち時間が一番短いネットワークプリンタ装置１によって印字出力することができる。

【００３２】

【発明の効果】この発明は以上説明したように、ホスト装置からの印字条件に対応することができるネットワークプリンタ装置のみホスト装置に送信要求を送出し、印字データを受信するようにしたから、エミュレーションの設定変更や各ネットワークプリンタ装置の状態監視をすること無く、自動で最適なネットワークプリンタ装置で印字させることができる。

【００３３】また、自己の処理能力に応じた時間に従ってホスト装置に送出する送信要求を遅延させるようにしたから、エミュレーションの設定変更や各ネットワークプリンタ装置の状態監視をすること無く、印字処理能力の速いネットワークプリンタ装置によって印字させることができ、印字処理の短縮を図ることができる。

【００３４】また、既に格納している印字データ量に従ってホスト装置に送る送信要求を遅延させるようにしたから、エミュレーションの設定変更や各ネットワークプリンタ装置の状態監視をすること無く、印字データ量が一番少ないネットワークプリンタ装置によって印字させることができ、印字処理の短縮を図ることができる。

【００３５】更に、既に格納している印字データ量に処理能力に応じて定めた時間を乗算して求めた遅延時間に従ってホスト装置に送る送信要求を遅延させるようにしたから、エミュレーションの設定変更や各ネットワークプリンタ装置の状態監視をすること無く、印字出力するまでの待ち時間が一番短いネットワークプリンタ装置によって印字出力することができ、印字処理の短縮を更に図ることができる。

【図面の簡単な説明】

【図１】この発明の実施例の構成を示すブロック図である。

【図２】上記実施例の動作を示す動作遷移図である。

【図３】この発明の第２の実施例の構成を示すブロック図である。

【図４】第２の実施例の動作を示す動作遷移図である。

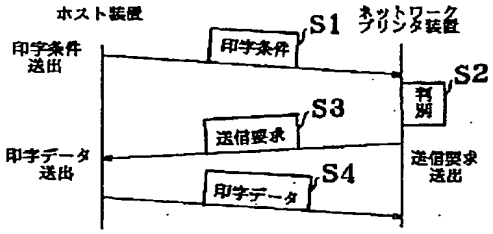
【図５】この発明の第３及び第４の実施例の構成を示すブロック図である。

【図６】第３及び第４の実施例の動作を示す動作遷移図である。

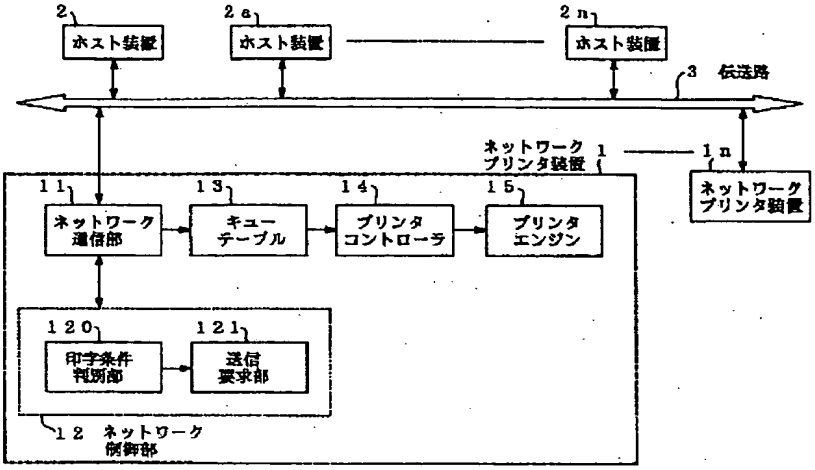
【符号の説明】

１～１ｎ	ネットワークプリンタ装置
１１	ネットワーク通信部
１２	ネットワーク制御部
１２０	印字条件判別部
１２１	送信要求部
１２２	送信要求遅延部
１２３	遅延時間算出部
１３	キューテーブル
１４	プリンタコントローラ
１５	プリンタエンジン
２～２ｎ	ホスト装置
３	伝送路

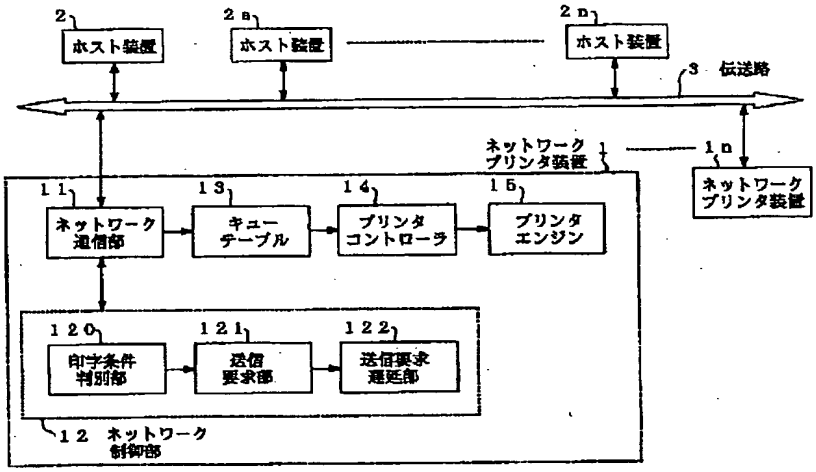
【図２】



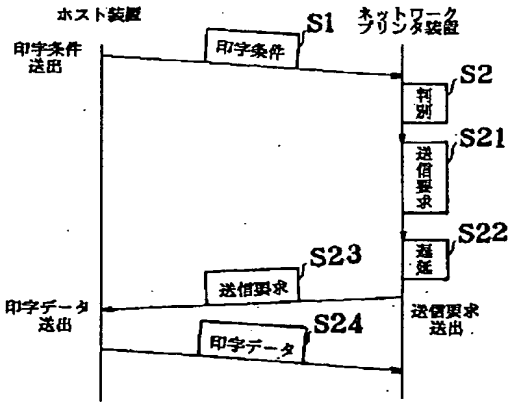
【図１】


2
ホスト装置
2a
ホスト装置
2n
ホスト装置
3 伝送路
ネットワーク
プリンタ装置 1
1n
ネットワーク
プリンタ装置
11
ネットワーク
通信部
13
キュー
テーブル
14
プリンタ
コントローラ
15
プリンタ
エンジン
120
印字条件
判別部
121
送信
要求部
12 ネットワーク
制御部

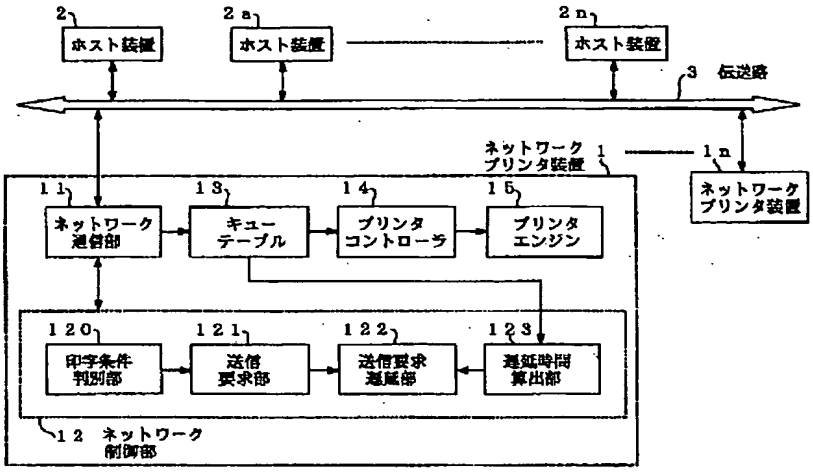
【図３】


2
ホスト装置
2a
ホスト装置
2n
ホスト装置
3 伝送路
ネットワーク
プリンタ装置 1
1n
ネットワーク
プリンタ装置
11
ネットワーク
通信部
13
キュー
テーブル
14
プリンタ
コントローラ
15
プリンタ
エンジン
120
印字条件
判別部
121
送信
要求部
122
送信要求
遅延部
12 ネットワーク
制御部

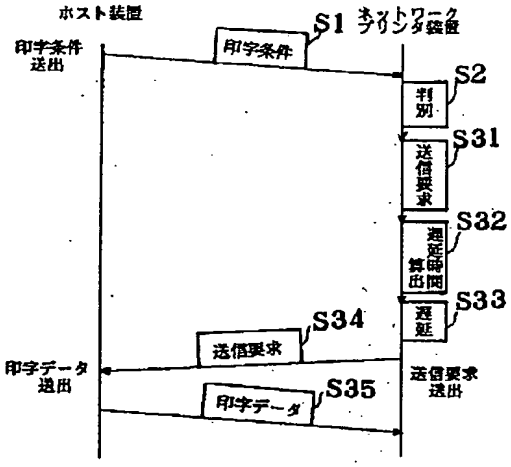
【図４】


ホスト装置
ネットワーク
プリンタ装置
S1
印字条件
印字条件
送出
S2
判別
S21
送信
要求
S22
遅延
S23
送信要求
印字データ
送出
送信要求
送出
S24
印字データ

【図５】


2
ホスト装置
2a
ホスト装置
2n
ホスト装置
3 伝送路
ネットワーク
プリンタ装置 1
1n
ネットワーク
プリンタ装置
11
ネットワーク
通信部
13
キュー
テーブル
14
プリンタ
コントローラ
15
プリンタ
エンジン
120
印字条件
判別部
121
送信
要求部
122
送信要求
遅延部
123
遅延時間
算出部
12 ネットワーク
制御部

【図６】


ホスト装置
ネットワーク
プリンタ装置
S1
印字条件
印字条件
送出
S2
判別
S31
送信要求
S32
遅延時間
算出
S33
遅延
S34
送信要求
印字データ
送出
送信要求
送出
S35
印字データ

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